

CLAIMS

1. A swept frequency source comprising a phase-locked loop frequency synthesiser, the phase-locked loop including:
 - a voltage controlled oscillator;
 - 5 means for generating a first swept waveform;
 - means for modulating the voltage-controlled oscillator with the first swept frequency waveform;
 - a reference frequency source;
 - frequency/phase discriminator means for generating an output voltage
 - 10 for controlling the voltage-controlled oscillator, the frequency/phase discriminator means having a first input for receiving an input from the reference frequency source and a second input;
 - means to generate a first control signal whose frequency is in a predetermined relationship to the instantaneous output frequency of the
 - 15 voltage-controlled oscillator;
 - neutraliser means comprising:
 - an input for receiving the first control signal;
 - second sweep waveform means for generating a second sweep waveform corresponding with the first sweep waveform;
 - 20 means responsive to the first control signals and the second sweep waveform to generate a second control signal whose level traverses a signal threshold at instants of time at which the first control signal would have crossed a corresponding threshold had no modulation been applied to the voltage controlled oscillator; and
 - 25 means to apply the second control signals to the second input of the frequency/phase discriminator means.
2. A swept frequency source as claimed in claim 1 in which the swept frequency waveform comprises a linear ramp waveform arranged to generate a voltage controlled oscillator output frequency whose

frequency changes by equal increments in equal intervals of time, in which the neutraliser means comprises means to repetitively generate digital words, each digital word representing the instantaneous value of the first control signal at a respective predetermined instant of time;

5 accumulator means arranged to add an instantaneous word with the cumulative sum of at least some of the immediately-preceding words to produce a digital sum word representing a new cumulative sum to which the next instantaneous value can be added;

10 a cosine look-up table arranged to be addressed by at least part of the digital sum word, the look-up table output contributing the second said control signal.

3. A method of generating a swept frequency using a phase-locked loop frequency synthesiser comprising the steps of:

15 providing a phase-locked loop comprising a reference frequency source, a frequency/phase discriminator, a voltage controlled oscillator, a first control signal whose frequency has a predetermined relationship to the output frequency of the voltage controlled oscillator;

modulating the voltage controlled oscillator output frequency with a first modulating waveform;

20 using the first control signal and a second modulating waveform corresponding with the first modulating waveform to produce a second control signal whose instantaneous amplitude transverses a predetermined threshold level at instants of time corresponding to the instants of time at which the first control signal would cross a
25 corresponding threshold level if no modulating waveform were present;

comparing the second control signal with the output signal of reference frequency source in the frequency/phase discriminator; and

utilising frequency/phase discriminator output to control the voltage controlled oscillator.

4. A swept frequency source substantially as described with reference to, or as illustrated in, Figures 2, 3 and 4 of the drawings.
5. A method of generating swept frequencies substantially as described with reference to, or as illustrated in, Figures 2, 3 and 4 of the drawings.